Bicycle Valley Groundwater Basin

- Groundwater Basin Number: 6-25
- County: San Bernardino
- Surface Area: 89,600 acres (140 square miles)

Basin Boundaries and Hydrology

The Bicycle Valley Groundwater Basin underlies Bicycle Valley, which is within the boundaries of the Fort Irwin National Training Center in the north-central Mojave Desert. The basin is bounded by the Granite Mountains to the north and northeast, by Tertiary volcanic highlands to the west and southwest, and the crystalline rocks of Tiefort Mountain to the south. A surface drainage divide forms a part of the eastern boundary (Jennings and others 1962). Average annual rainfall ranges from 4 to 8 inches.

Hydrogeologic Information

Water Bearing Formations

Unconsolidated younger and semi-consolidated older Quaternary age alluvium constitute the principal water bearing deposits in the basin. The younger alluvium generally lies above the groundwater surface (Kunkel and Riley 1959). The older alluvium forms the primary water-bearing unit in the basin and reaches a thickness of as much as 440 feet (Bader 1969). Coarse alluvial fan deposits thin gradually and become interbedded with layers of lacustrine silt and clay near Mclean and Nelson (dry) Lakes in the north and Bicycle (dry) Lake in the southern part of the valley (Kunkel and Riley 1959).

Groundwater beneath Bicycle Valley is generally unconfined, although confined conditions occur near Bicycle Lake (Bader 1969). The depth to groundwater in the basin is about 171 feet (Bader 1969; Kunkel and Riley 1959). A well near Bicycle Lake yielded as much as 710 gpm from alluvium (Kunkel and Riley 1959).

Restrictive Structures

The Bicycle Lake fault is found in the southern part of the basin, but it is not known whether or not the fault is a groundwater barrier.

Recharge Areas

The natural recharge of the basin is mainly from infiltration of rainfall and percolation of runoff through ephemeral stream channels. Percolation of runoff through alluvial fans emanating from the Granite Mountains and Tiefort Mountain provide the main recharge to the basin (Bader 1969; DWR 1964). The general groundwater flow direction is toward Bicycle Lake in the southern part of the valley (Bader 1969).

Groundwater Level Trends

Data from northern part of the basin show that groundwater levels fluctuated about 5 feet in 1994 and 1995. Water level elevation on the west side of Bicycle Lake has remained relatively steady during 1993 through 1999. In

the southern part of the basin, water levels in one well declined 50 feet during 1955 through 1994, and another well, 77 feet during 1967 though 1999. Water level contours show that groundwater moves northward away form Bicycle Lake (Mendez and Christensen 1997) toward pumping wells.

Groundwater Storage

Groundwater Storage Capacity. The total storage capacity of the basin is estimated to be about 1,700,000 af (DWR 1975).

Groundwater in Storage. Unknown.

Groundwater Budget (Type C)

Groundwater budget information is not available.

Groundwater Quality

Characterization. Water from one well is characterized as sodium sulfate-bicarbonate type water with TDS content of 608 mg/L (Kunkel and Riley 1959). Data from 5 public supply wells in the basin show an average TDS content of 618.2 mg/L and a range of 508 to 810 mg/L.

Impairments. Fluoride content was 1.6 mg/L in one well (DWR 1964; Kunkel and Riley 1959).

Water Quality in Public Supply Wells

Constituent Group[1]	Number of wells sampled[2]	Number of wells with a concentration above an MCL[3]
Inorganics – Primary	6	5
Radiological	6	1
Nitrates	6	0
Pesticides	5	0
VOCs and SVOCs	5	0
Inorganics – Secondary	6	5

[1] A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).
[2] Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.
[3] Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Production Characteristics

	Well yields (gal/min)
Municipal/Irrigation	Range: to 710
	Total depths (ft)
Domestic	
Municipal/Irrigation	Range: 170-260 (Mendez and Christensen 1997)

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
USGS	Groundwater levels	22
USGS	Miscellaneous water quality	12
Department of Health Services and cooperators	Title 22 water quality	6

Basin Management

Groundwater management:

Water agencies

Public	Fort Irwin National Training Center
Private	

References Cited

Bader, J.S. 1969. *Ground-Water Data as of 1967 South Lahontan Subregion California*. U.S. Geological Survey. Water Resources Division. Open-File Report. 25p.

California Department of Water Resources (DWR). 1964. *Ground Water Occurrence and Quality Lahontan Region*. p.191-194.

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Mendez G.O. and Christensen, A.H. 1997. Regional Water Table (1996) and Water-Level Changes in the Mojave River, the Morongo, and the Fort Irwin Ground-Water Basins, San Bernardino County, California. U.S. Geological Survey Water-Resources Investigations Report 97-4160. 34p.

Errata

Substantive changes made to the basin description will be noted here.